

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
29 January 2004 (29.01.2004)

PCT

(10) International Publication Number
WO 2004/009625 A3

(51) International Patent Classification⁷: **C07K 14/47**

(21) International Application Number:
PCT/GB2003/003240

(22) International Filing Date: 22 July 2003 (22.07.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0216972.0 22 July 2002 (22.07.2002) GB

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(81) Designated States (*national*): **AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,**

CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): **ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).**

Declaration under Rule 4.17:

— *of inventorship (Rule 4.17(iv)) for US only*

Published:

— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:
23 September 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.



A3

WO 2004/009625 A3

(54) Title: PEPTIDES AND PEPTIDE DERIVATIVES FOR THE TREATMENT OF α -SYNUCLEIN-RELATED DISEASES

(57) Abstract: The invention provides peptides which comprise a sequence of three to twelve contiguous amino acid residues (the "contiguous sequence") from amino acid residues 61 to 100 of naturally occurring α -synuclein. The contiguous sequence is linked at its N-terminal and/or C-terminal end to one or more further amino acid residue(s) which are more hydrophilic than the amino acid residue to which that end of the sequence is linked in naturally occurring α -synuclein. The invention also provides derivatives and analogues of such peptides. Peptides, derivatives or analogues of the invention are of use in prevention of α -synuclein oligomerisation and/or aggregation associated with the diseases known as the synucleinopathies. As a result peptides according to the invention are susceptible of use in the preparation of medicaments, and also in methods of treatment, for prevention and/or treatment of synucleinopathies.

INTERNATIONAL SEARCH REPORT

GB 03/03240

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 C07K14/47

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 IPC 7 C07K G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, BIOSIS, Sequence Search, WPI Data, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 02/04482 A (OSTRETOVA GOLTS NATALIE ; PANACEA PHARMACEUTICALS INC (US); LEBOWITZ) 17 January 2002 (2002-01-17) top line page 13 -----	1-28
X	GIASSON BENOIT I ET AL: "A hydrophobic stretch of 12 amino acid residues in the middle of alpha-synuclein is essential for filament assembly" JOURNAL OF BIOLOGICAL CHEMISTRY, vol. 276, no. 4, 26 January 2001 (2001-01-26), pages 2380-2386, XP002265314 ISSN: 0021-9258 the whole document ----- -/-	1-28

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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Date of the actual completion of the international search

18 December 2003

Date of mailing of the international search report

04.08.04

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GB 03/03240

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	MURRAY I V J ET AL: "THE ROLE OF THE CARBOXY TRUNCATION ON alpha - SYNUCLEIN FIBRIL FORMATION." SOCIETY FOR NEUROSCIENCE ABSTRACT VIEWER AND ITINERARY PLANNER, vol. 2002, 6 November 2002 (2002-11-06), page Abstract No. 689.4, XP002265310 32nd Annual Meeting of the Society for Neuroscience; Orlando, Florida, USA; November 02-07, 2002 the whole document -----	1-28
Y	BODLES ANGELA M ET AL: "Identification of the region of non-Abeta component (NAC) of Alzheimer's disease amyloid responsible for its aggregation and toxicity" JOURNAL OF NEUROCHEMISTRY, vol. 78, no. 2, July 2001 (2001-07), pages 384-395, XP002265312 ISSN: 0022-3042 the whole document -----	1-28
Y	UVERSKY VLADIMIR N ET AL: "Biophysical properties of the synucleins and their propensities to fibrillate. Inhibition of alpha-synuclein assembly by beta- and gamma-synucleins" JOURNAL OF BIOLOGICAL CHEMISTRY, vol. 277, no. 14, 5 April 2002 (2002-04-05), pages 11970-11978, XP002265313 ISSN: 0021-9258 the whole document -----	1-28

INTERNATIONAL SEARCH REPORT

GB 03/03240

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
WO 0204482	A	17-01-2002		AU 7186501 A CA 2415179 A1 CN 1440420 T EP 1299411 A1 JP 2004502781 T WO 0204482 A1 US 2002151464 A1		21-01-2002 17-01-2002 03-09-2003 09-04-2003 29-01-2004 17-01-2002 17-10-2002